



CANADA

CANADIAN WEEKLY BULLETIN

INFORMATION DIVISION • DEPARTMENT OF EXTERNAL AFFAIRS • OTTAWA, CANADA

September 16, 1964

Vol. 19 No. 38

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ENCOURAGING CANADA'S INDUSTRIAL GROWTH

The following is a partial text of an address by the Minister of Industry, Mr. C.M. Drury, to the Conference of Canadian Industrial Research at Ottawa on September 2:

...Since 1945, the industrialized nations of the world have been experiencing a "technological revolution" stemming from the systematic application of science to the development of new products and processes. Initially, this revolution was based on the scientific advances achieved under the impetus of World War II, but the process has now become regenerative and is proceeding at an ever-increasing pace. As a case in point, one of our larger and long-established electronic firms recently estimated that almost all of its current business is derived from new products which were not even on the market ten years ago. Another firm in the business-machine field has experienced a 75 percent change in their product line over the past five years!

In order to account for the dynamic growth experienced by the advanced industrial nations in recent years, economic theorists have had to introduce a fourth factor of production, namely "technology" (in addition to the classical factors of land, labour and capital). A recent study, attributes 90 per cent of the rise in U.S. productivity over the past 50 years to "technical progress", of which almost half results from the advance of knowledge. A graphic illustration of this point is presented by the so-called "science-based industries (e.g. electronics, plastics), which have consistently demonstrated the highest rates of growth in recent years. It is no accident that these industries also display the

highest research intensity (i.e. ratio of research expenditure to sales). In fact, the Federation of British Industries has reported differences in growth rates as high as two-and-a-half times between firms with the highest and lowest R-and-D budgets in the chemical industry.

Similarly, on a national scale, recent data show evidence of a correlation between economic growth, *per capita* income and the proportion of gross national product allocated to scientific endeavour. By coincidence or otherwise, those countries having a higher research ratio seem to enjoy higher growth rates and their manufactured goods appear to fare better on the export market (e.g. Japan, Germany, France, Sweden and the Netherlands).

At the risk of preaching to the converted, I believe that it is a fair contention that science and technology are vital catalysts for growth in an industrial economy. The development of new and better products by Canadian industry would not only expand the domestic market but would also open up new opportunities for our manufactures in world markets.

RESEARCH AND DEVELOPMENT

IN CANADIAN INDUSTRY

Turning now to the Canadian scene, it is instructive to examine the level and distribution of our scientific research and development activities. Over the most recent five-year period for which statistics are available, overall R-and-D expenditure has shown a slow but steady growth from \$220 million in 1956 to \$320 million in 1961. However, when we look at the amount performed by Canadian industry, we discover

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